Where-from (applying and conſidering the Refractions in both,) I found the Sun at hor. *6.* 55′ to be 74°. 30′. in conſequence of the lower Head of ♊. The difference of Longitude betwixt theſe two Stars, is 17°. 59′: And therefore now the Sun in conſequence of the *Lucida calcis* ♊ 92°. 29′. So that the Sun's *Apparent* motion betwixt the Year 1582, the 5th of *March* at hor. 4. 42′. and the year 1585, the 15th of *Septemb.* at hor. *6.* 55′. *mane* (beſides the whole revolutions) was 187°. 16′: But the *Mean* Motion is 191°, 2′; greater than the *Apparent* by 3°. 46′: Which, parted in proportion to the Equation of the Earth's Motion, collected for thoſe Times from my New Tables, gives the greateſt Equation of the Orb, 1°. 54′. 15″; conſenting, to my wonder, (without any wreſting of the Obſervations) with that, which I deduced from *Caſſini*'s correct Meridional Altitudes.

I had not had time to examine any of thoſe others, he hath related; nor indeed are they any ways convenient: But by this what I have done you may ſee, that if once we get Inſtruments to our purpoſe, that then it will not be difficult to correct the *Sun*'s *Motions* without the conſideration of the Meridional Altitudes, in which 24 Seconds error, gives the Place above one Minute amiſs.

At preſent I uſe Tables, for the Sun's Motion, grounded on this Equation, which is leſs than *Tycho*'s by no leſs than *9* Minutes: Which muſt needs cauſe great Alterations in our Numbers for all the other Planets; in correcting of which, I ſhall employ ſome of thoſe Minutes I can ſpare from my more neceſſary Studies; and have hopes of good Succeſs.

Tycho's great Equation made him commit no ſmall Errors, and put him upon ſtrange ſhifts to hide and ſalve them. All his Obſervations of the Planets in their Oppoſitions to the Sun, are to be corrected, before we may attempt to repreſent them by Numbers: For, his Errors in the Sun's place made him err ſometimes 5 or *6* hours in the time of the Oppoſition; which muſt be reformed.

And that I may perform my Diſcourſe of the Parallax of *Mars* obſerv'd, I ſhall fall upon it at my ſpare hours after *Chriſtmas*.

Some Obſervations and Experiments made, and in a Letter communicated to the Publiſher, for the R. Society, *by the Learned and Inquiſitive* Mr. Martin Liſter.

I Shall venture to entertain you at preſent with a few looſe Notes, which you will be pleas'd to take in good part, and diſpoſe of them as you think fitting.

I. *Of the Effloreſcence of certain Mineral Glebes.*

I keep by me certain big pieces of crude Allom-Mines, ſuch as it

was.

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was taken out of the Rock. I had alſo in the ſame Cabinet like pieces of the ordinary Fire-ſtone or Marcaſite of the Coal-pits, which here we call *Braſs-lumps*. In proceſs of Time both theſe Glebes ſhot forth Tufts of long and ſlender fibres or threads; ſome of them half an inch long, bended and curled like Hairs. In both theſe Glebes, theſe Tufts were in ſome meaſure tranſparent and cryſtalline. Theſe Tufts did as often repullulate, as they were ſtruck and wiped clean off.

Herein theſe Fibres differ'd in Taſte; the Alluminous very Allomy and pleaſantly pungent; the Vitriolick ſteptique and odious. Again, the Allom-ones, being diſſolv'd in fair water, raiſed a ſmall ebullition; whereas the Vitriolick Fibres diſſolved quietly. The Allom-fibres were generally ſmaller, and more opaque, Snow-like; the Vitriolick larger, many Fibres equalling an Horſe-hair in thickneſs, and more cryſtaline.

The Water, wherein the Allom-fibres were diſſolv'd, did give no red Tincture with Gall; not by all the Means I could deviſe to aſſiſt them; whatever hath (and that with great confidence) been ſaid to the contrary, by ſome of the Writers of our *Yorkſhire* Spaws: The Vitriolick did immediately give a purple Tincture with Gall.

Having laid pieces of the ſame Marcaſite in a Cellar, they were in a few Months cover'd over with *green Copperas*, which was theſe Fibres ſhot and *again diſſolved* by the moiſt Air, clodder'd and run together.

Expoſing other pieces of the ſame Vitriolick Glebe in my Window, where the Sun came, they were cover'd over with a white farinaceous Matter, that is, with theſe Fibres calcined by the Rays of the Sun and warm Air, beating upon them.

Of what *Figure* theſe Fibres were, whether round or angular, I could not well diſcern. But I take theſe fibrous and thread-like ſhootings of Allom and Vitriol to be moſt genuine and natural; and their angular ſhootings, after ſolution, into Cubes and Rhomboides, to be forc'd and accidental; Salts of very different natures, as well Vegetable as Foſſile, by a like proceſs in cryſtallizing of them, being obſerv'd to ſhoot into like Figures. But this is not my Purpoſe at this Time.

II. *Of an odd figured* IRIS. See Fig. 3. and 4.

I have not obſerv'd any Rock or ſort of Stone, whether Metalline or more Vulgar, which hath not its different ſort of *Sparr*, ſhot in ſome part or other of its Bed or Seams. And theſe Sparrs differ not only in their Colours and other Accidents, but eminently too in their Figure.

Figure. To paſs by divers, which I have collected, I ſhall deſcribe one of a very curious Figure, and which (though very common in our blew Lime-ſtone Rocks, out of which, plenty of Lead-Ore is got,) yet is not, that I know of, mention'd by any Author.

Theſe Cryſtals are moſtly of a black Water, like the black flint in Chawk-hills; but there are of them, which have a purpliſh or amethyſtine colour; and ſome there are as clear as cryſtal. They adhere to the Seams of the Rock, be it betwixt Bed and Bed, or where-ever there are croſs and oblique Veins through the very Subſtance of the Bed.

The ſmaller the Veins, the leſs the *Iris*. You will find of them as ſmall as Wheat-corns, and others an hundred times bigger. They ſhoot from both ſides the ſeam, and mutually receive one the other.

They are figured thus, *viz.* a column of ſix Plains, very unequal as to Breadth; the end adhering to the Rock is always rugged, as a thing broken off; the other end of the Column conſiſts of three quinangular Plains, very little rais'd in the middle: Theſe Plains too are very unequal. Let them hug one another, or be any ways ſtraightned and compreſſed in their ſhooting; yet the number of Plains mention'd, both of the column and top, is moſt certain. The Places, where infinite of them may be had, are *Rainsborough Scarr* upon the *Rible*: alſo in a Stone-quarry near *Eſhton Tarne* in *Craven*.

III. *Gloſſopetra tricuſpis non-ſerrata*. Fig. 1. and 2.

Mr. *Ray* in his Travels, hath theſe Words concerning the *Gloſſopetræ*, pag. 115. *Of the* Gloſſopetræ (*ſaith he*) *I have not yet heard, that there have been any found in* England; *which I do not a little wonder at, there being Sharks frequently taken upon our Coaſts.* I have had out of the Iſle of *Shepy* in the River of *Thames*, very Sharks Teeth dug up there; which could not be ſaid to be petrifi'd; though, as to the Colour, they were ſomewhat guilded with a Vitriolick tarniſh at our firſt receiving them; but they were white, and in a ſhort Time came to their natural Colour.

In the Stone-quarries in *Hinderskelf*-Park, near *Malton*, I had this Stone (the Scheme whereof I ſend you; *Fig.* 1.) the greateſt rarity of this kind I ever met with, and which I took out of the Rock there my ſelf. It is a fair *Gloſſopetra* with 3 points, of a black liver-colour, and ſmooth; its edges are not ſerrate; its *baſis* is (like the true Teeth) of a rugged Subſtance; it is carved round the *baſis* with imboſſed Work: It hath certain eminent ridges or lines like Rays, drawn from the *Baſis* to each Point.

IV. *Of certain* Dactili Idæi, *or the true* Lapides Judaici, *for* kind *found with us in* England. *Fig.* 5.

The Stones call'd *Dactili Idæi* and *Lapides Judaici*, are brought over to us from beyond Seas in divers ſhapes; and ſome of them are deſcribed in Authors. We have plenty of them for *kind* in theſe Parts, as in the Stone-quarries at *Newton* near *Hemſley*, and at *Hellingley* by *Malton*. There is ſome variety in the figure of them here alſo; but the moſt common one in theſe Rocks, is after the faſhion of a *Date-ſtone*, round and long, about an inch, and ſometime longer. They are a little ſwelled in the middle, and narrower towards each end: They are channelled the length-way, and upon the ridges knotted or purled all over with ſmall knots, ſet in a quincunx-order. The inward Subſtance is a white opaque Sparr, and breaks ſmooth like a flint; not at all hollow in the middle, as are the *Belemnites*.

V. *Of the Electrical power of Stones in relation to a Vegetable Roſin.*

It ſo happen'd, that having Occaſion in *July*, to view certain Foſſils, which I had diſpos'd of into divers Drawers in a Cabinet made of *Barbadoes Cedar*, I obſerv'd many of the Stones to be thick-cover'd over with a liquid Roſin like Venice Turpentine. Examining further, there was not a Drawer, wherein there was not ſome more ſome fewer Stones thus drenched.

That this could be no Miſtake, as from dropping, the bottoms of the Drawers are of Oak. Again, many Stones, which were lapped up in Papers, were yet wholly infected and cover'd with this Roſin. Beſides, after diligent Search there appear'd no anner of exudation in any part of the Cabinet.

Two things I thought very remarkable: 1. That of the many ſorts of Stones I therein had, divers eſcaped, but not any of the *Hæmatites*-kind; having therein *Manganes*, *Sciſtos*, *Botryades*, &c. which were all deeply concern'd. 2. That amongſt perhaps 500 pieces, of the *Aſtroites*, here and there one or two in an Appartment, and ſometimes more, were ſeiſed, and the reſt dry; as it fares with People in the time of the Plague in one and the ſame Houſe. I further obſerved, that Stones of a ſoft and open Grain, as well as thoſe of a hard and poliſh'd *Superficies*, were concern'd in a manner alike.

'Tis certain, that the whole body of the Turpentine of the Cedar-wood was carried forth into the Air, and floating therein, was again condenſed into its own proper Form upon theſe Stones.

This makes it more than probable, that Odoriferous Bodies emit and ſpend their very Subſtance. Thus *Camphir* is ſaid, if not well ſecured, totally to fly away. Again, it is hence evident, that there is great

great difference betwixt the *Diſtillation* of Vegetable Juyces, and the *Emiſſion* of Effluviums or this *natural* Diſtillation; *that* really ſeparating and dividing the Subſtance into different Parts; but *this* carrying out the whole entirely and unalter'd in its Nature.

VI. *Of the Flower and Seed of Muſhroms.*

The general and received Opinion of *Batoniſts* concerning *Muſhroms* is that, which *Caſpar Bauhinus* in his *Pinax* expreſſes in theſe few Words, *viz. Fungi neq; plantæ, neq; radices, neq; flores, neq; ſemina ſunt; ſed nihil aliud quam terræ, arborum, lignorum putridorum, aliarumq; putrilaginum humiditates ſuperfluæ.* I am of the Opinion, that they are Plants of their own kind, and have more than a chance-original. We will inſtance in that *ſpecies*, called *Fungus poroſus craſſus magnus* I.B. The texture of the Gills is like a Paper prick'd full of Pin-holes. In *Auguſt* this is very frequent under Hedges, and in the middle of the Moors in many Places of this Country. It ſeems to me (and, no doubt it will to any Perſon that ſhall well examine it,) that the Gills of this Muſhrom are the very Flower and Seed of this Plant. When it is ripe, the Gills here are eaſily ſeparable from the reſt of the Head: Each Seed is diſtinct from other, and hath its Impreſſion in the Head of the Muſhrom, juſt as the Seeds of an Artichoak hath in the bottom of it. The bigger end of the Seed is full and round; and they are diſpoſed in a ſpiral Order juſt as thoſe of the Artichoak. The like we do think of all other Muſhroms, however differently figured.

And if it ſhall happen to him that ſhall ſow them, that theſe will not produce thir kind, but be ſteril; it is no ſtrange Thing amongſt Plants, there being whole genus's of Plants that come up, and flower, and ſeed, and yet their Seed was never known to produce Plants of their Kind, being naturally ſteril, and a volatile Duſt, as all the *Orchides* or *Bee-flowers*.

We ſhall not here omit to tell you farther concerning this Muſhrom, that, when freſh gather'd, it is of a Buff-colour inſide outſide; and yet, cut through the middle, it will in a Moment change from a pale-yellow to a deep purple or blew, and ſtain Linnen accordingly. A drop of the Juyce leiſurely ſqueezed out, will change, holding it betwixt your Eye and the Light, through all the Colours of the Rainbow, in the very Time of its falling, and fix in a Purple, as it doth in the ſpringing out of its Veins.

VII. *Of the ſpeedy vitrifying of the whole Body of Antimony by Cawk.*

The ſeveral vitrifications of *Antimony* are either opaque or tranſparent. To the firſt kind I ſhall add one, which is in itſelf very curious, and hath theſe Advantages above the reſt, that it is done with great Eaſe and Speed; and by it I have performed ſome Things upon Minerals and Metals, which with crude Antimony alone I could not effect.

Take of Antimony one Pound; flux it clear: Have an Ounce or two of the Cawk-ſtone (by and by to be deſcribed) in a Lump red-hot in readineſs. Put it into the Crucible to the Antimony; continue the Flux a few Minutes: Caſt it into a clean and not greaſed Mortar, decanting the melting Liquor from the Cawk.

This Proceſs gives us above 15 Ounces of *Vitrum* of *Antimony*, like poliſh'd Steel, and as bright as the moſt refined Quickſilver. The Cawk ſeems not to be diminiſh'd in its Weight, but rather increaſed; nor will be brought to incorporate with the Antimony, though flux'd in a ſtrong blaſt.

This Cawk-ſtone is a very odd Mineral, and I always looked upon it to be much a-kin to the white milky Mineral Juyces, I formerly ſent you a *Specimen* of: And this Experiment is demonſtrative that I was not miſtaken; for, the milky Juyce of the Lead-Mines vitrifies the whole Body of Antimony in like Manner.

That this Vitrification is from the *proper* Nature of Cawk, I little doubt; for, I could never light upon any one Mineral Subſtance, which had any ſuch Effect upon Antimony; and I have tryed very many, as *Lapis Calaminaris*, Stone-Sulphur or *Sulphur vivum*, *Galactites*, *Sulphur Marcaſite*, *Allom-glebe*, divers *Sparrs*, &c.

Cawk is a ponderous white Stone, found in the Lead-Mines; it will draw a white Line like Chalk or the *Galactites*: And though it be ſo free, that it is more firm, and hath a ſmooth and ſhining Grain, Sparr-like, yet not at all tranſparent. Of the Spirit, it yields by Diſtillation, another time. I am,

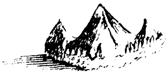
York, Novemb. 20. 1674. Sir, Yours, &c.

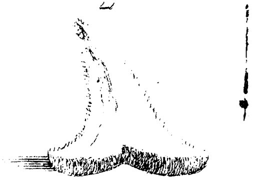
An Account of ſome Books.

I. *TRACTS*, *containing* 1. Suſpicions *about ſome* Hidden Qualities *of the* Air, *with an Appendix touching* Celeſtial Magnets, *and ſome other Particulars.* 2. *Animadverſions upon Mr.* Hobbs's Problemata de Vacuo. 3. *A Diſcourſe of the* Cauſe *of Attracton by Suction: By the Honourable* ROBERT BOYLE *Eſq; Fellow of the* R. Society, London, 1674. *in 8vo.*

IN the *firſt* of theſe Tracts, the noble Author, paſſing by thoſe obvious Qualities of the Air, *Heat*, *Cold*, *Dryneſs* and *Moiſture*, and ſuch others, as are now alſo well enough known, I mean *Gravity*, *Springineſs*, *Refractiveneſs*, &c. enquires into, and delivers his Conjectures about, ſome yet *more Latent* ones. And the chief Account,

upon





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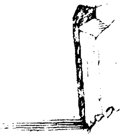

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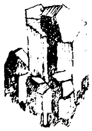

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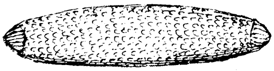

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